



Modelling of Multiphase Flow

ONLINE COURSE (40 Hrs.)

Effort: 6-8 hrs/week



National Institute of Technology Manipur, India centrally government funded institution is set up to impart quality technical education at various levels of higher learning. It is one of the ten new NITs established and developed as “**Institute of National Importance**” by an act of Parliament in 2007. As one of the National Institutes of Technology (NIT), the Institute has the responsibility of providing high quality education in Engineering, Technology and Sciences to produce competent technical and scientific manpower for the country. The Institute offers **Bachelor of Technology, Master of Technology, Master of Science** and **PhD** programmes in several disciplines of Engineering, Technology and Sciences.

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National Institute of Technology, Manipur

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Dr. Huirem Neeranjan Singh
Head & Assistant Professor
Department of Mechanical Engineering
National Institute of Technology, Manipur

Course Coordinator

Dr. Dushyant Singh
Assistant Professor
Department of Mechanical Engineering
National Institute of Technology, Manipur

Course Overview

Duration: 40 hrs. (Including Minor Project)

Start Date: 25 December 2020

Language: English

This course will be offered online on weekends and holidays. For queries participants can contact course coordinator.

Organized By:

**Department of Mechanical Engineering
National Institute of Technology Manipur
West Imphal, Manipur, India- 795004**

ABOUT THIS COURSE

This course is designed to provide participants with a background on the fundamental understanding of the dynamics of multiphase flow. Multiphase flows are critically important for many industries such as mechanical, chemical, civil, petroleum, petrochemicals, pharmaceuticals, food processing and agriculture. In this course basics of multiphase flow and the numerical approaches used to model multiphase flow will be discussed. The course will cover theoretical background and hands on sessions on the Eulerian-Eulerian (two-fluid) models, Eulerian-Lagrangian (discrete particles) models, and discrete phase (particles, droplets, or bubbles) in a continuous phase with the emphasis of heat and mass transfer. In the Eulerian-Lagrangian model, conversion of discrete phase into continuous phase and its impact on the heat and mass transfer will be covered.

WHAT THIS MULTIPHASE COURSE COVERS

- To understand the fundamentals of multiphase flow.
- To identify the nature of flow-based studies involving multiphase flow systems.
- To predict how to conceptualize a multiphase flow problem and apply different multiphase modes to simulate it.

WHAT YOU WILL LEARN

MODULE1 INTRODUCTION OF MULTIPHASE FLOW (**2** HRS.)

MODULE2 CLASSIFICATIONS AND MODELLING APPROACHES (**2** HRS.)

MODULE3 INTRODUCTION AND MODELLING OF HOMOGENEOUS PHASE USING VOF METHOD (**8** HRS.)

MODULE4 INTRODUCTION AND MODELLING OF HOMOGENEOUS PHASE USING MIXTURE MODEL (**4** HRS.)

MODULE5 INTRODUCTION AND MODELLING OF DISCRETE PHASE (**8** HRS.)

MODULE6 INTRODUCTION AND MODELLING OF EULERIAN-LAGRANGIAN FRAMEWORK (**8** HRS.)

MODULE7 MINOR PROJECTS (IN GROUP) (**8** HRS.)

ABOUT THE CERTIFICATE

Certificates will be issued to all the participants upon successful completion of the program, as per stipulated requirements.

ABOUT THE COURSE INSTRUCTOR



Dr. Kuldeep Singh is currently working in the Rolls Royce's University Technological Centre in "Gas Turbine and Transmission Research Centre (G2TRC), University of Nottingham, United Kingdom as a senior researcher. He has worked with the diverse team of international researchers. He is a Gold Medallist in B.Tech. He did M.Tech and PhD from IIT Delhi. Before joining his current institution, he was Post-Doctoral Fellow in University of Beira Interior, Portugal. He is recipient of prestigious INSPIRE Faculty Award in 2017 from DST. He has worked on numerous projects sponsored by DRDO, DST, BHEL, Portuguese Foundation of Science and Technology, European Union & RR.

ABOUT THE COURSE COORDINATOR

Dr. Dushyant Singh is currently working as an Assistant Professor in the Department of Mechanical Engineering at National Institute of Technology Manipur (NIT Manipur). He received his PhD from Indian Institute of Technology Delhi (IIT Delhi) and Before joining his NIT Manipur, he was a Post-Doctoral Researcher in joint industrial research work with BHEL industry. His current research is collaborative and directly practical engineering applications in industries. He has 40 research articles in reputed International Journals and Conference and published 2 book chapters. He has research interests in the area of CFD, Experimental and Numerical analysis of Fluid Flow and Heat Transfer Enhancement, Multiphase Flows.



Registration & Fees Details for Indian Participant

Students(UG/PG/PhD): 2000 (INR)

Faculty/Engineers/Scientists: 4000(INR)

Registration & Fees Details for Foreign Participant

Students (UG/PG/PhD): 50 (US \$)

Faculty/Engineers/Scientists: 100(US \$)

Account Name	Director NIT Manipur IRG
Bank Name and Branch	Bank of Baroda, NIT Manipur
Account Number	60330100000143
IFSC Code	BARB0NITMAN

For any query, you can contact to the course coordinator

Dr. Dushyant Singh, Assistant Professor (ME), NIT Manipur-India

Email: cfdnitm@gmail.com ; dushyant7raghu@gmail.com // Mb: +91-7085680624

Kindly register through this link: <https://forms.gle/wtSWmVRfzPJ6f6RV9>



Please consider that the number of seats is limited! Last Date of Registration *December 20, 2020.*